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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPELLANT / APPLICANT:	Eric B. STENZEL
SERIAL NO.:	10/701,455
FILED:	November 6, 2003
FOR:	METHOD AND APPARATUS FOR CONTROLLED DELIVERY OF ACTIVE SUBSTANCE
ART UNIT:	3738
EXAMINER:	Gherbi, Suzette J. J.
Attorney Docket No.:	12013/48301

MAIL STOP APPEAL BRIEF-PATENTS
COMMISSIONER FOR PATENTS
P. O. Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF AMENDED APPEAL BRIEF

In response to the Office Action dated August 16, 2006, the Appellant respectfully submits the enclosed second amended Appeal Brief.

The Office is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,

Date: September 13, 2006

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APPEAL BRIEF

In accordance with 37 C.F.R. § 41.37, Appellant respectfully submits this Appeal Brief, in triplicate. The Commissioner is authorized to charge the fee of $ 500.00 under 37 C.F.R. § 41.20(b)(2) to deposit account no. 11-0600.

Real Party In Interest

The real party in interest is Boston Scientific Scimed, Inc., assignee of this application. The inventor, Eric B. Stenzel, executed an assignment to Scimed Life Systems, Inc., which was recorded in the U.S. Patent & Trademark Office ("PTO") on November 6, 2003, at reel 014685, frame 0427. Effective January 1, 2005, Scimed Life Systems, Inc., changed its name to Boston Scientific Scimed, Inc. Documentation of that name change was recorded in the PTO at reel/frame 017798/0848.

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Related Appeals and Interferences

There are no other prior or pending appeals, interferences or judicial proceedings known to Appellant, Appellant's legal representative, or the assignee that are related to, will directly affect, will be directly affected by, or will have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 2, 3, 6-8, 18 and 22 have been canceled.

Claims 1, 4, 5, 9-17, 19-21, and 23-27 are pending, stand finally rejected, and are the subject of this appeal. These claims are reproduced in the Appendix to this Appeal Brief.

Status of Amendments

No amendments were filed after final rejection.

Summary of Claimed Subject Matter

The invention relates to medical implants for the controlled delivery of therapeutic agents.

Background

Medical implants are used for a number of medical purposes. For example, stents may be implanted in a vessel like a coronary artery to hold the vessel open. Often medical implants such as stents are coated with a therapeutic agent for delivery of the therapeutic agent to the tissue at the implantation area.

There is a need to apply the therapeutic agent to the medical implant such that the delivery rate of the therapeutic agent can be predictably controlled. For example, in certain

applications the goal may be the uniform delivery of the therapeutic agent while in other applications the desired effect would be a slow, sustained release of the therapeutic agent. Conventional methods include applying the therapeutic agent in combination with a polymer to the surface of a medical implant. The therapeutic agent is released as it elutes through the polymer material when it is placed in the body.

Prior art cited by the Examiner, specifically U.S. Patent No. 6,849,089 to Stoll (the "Stoll '089 patent"), shows application of therapeutic agent to a medical implant by the use of coated micro-pellets. As shown in Figure 6 of the Stoll '089 patent, reproduced below, each micro-pellet 5'' includes a first material 4'' comprising a therapeutic agent (such as a cell-proliferation inhibiting substance) and a coating comprising a bioresorbable polymer. In the Figure 6 embodiment, the coating is the same for each micro-pellet, such that the therapeutic agent in each micro-pellet has the same release rate. Figure 6 of the Stoll '089 patent is reproduced below:

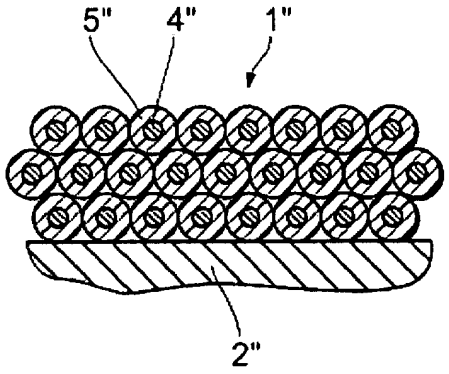

Fig. 6

The Stoll '089 patent describes an alternate embodiment, illustrated in Figure 7, with the micro-pellets having coatings of different thicknesses so that the differently-coated pellets have different release rates for the therapeutic agent. Because of the different coating thicknesses, the micro-pellets in the Stoll '089 patent that have different release rates have different sizes. This is illustrated in Figure 7 of the Stoll '089 patent, reproduced below:

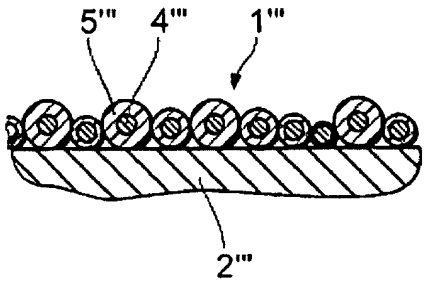

Fig. 7

Appellant's Claimed Invention

The claims as now pending on appeal are directed to a specific embodiment of the Appellant's invention in which mirco-pellets have different release rates but the micro-pellets themselves have substantially the **same** size, despite the different release rates. This is in contrast to the Figure 7 embodiment of the Stoll '089 patent in which the differently-coated pellets have **different** sizes.

The Appellant's invention with mirco-pellets having different release rates but substantially the same size has advantages in terms of manufacture, delivery and implantation. For example, the specification describes various methods of manufacture, including coating a stent with an adhesive and then rolling the stent on the micro-pellets. Having the micro-pellets be substantially the same size facilitates transfer of the micro-pellets to the stent. The invention can additionally or alternatively provide other advantages, such as presenting a more uniform

profile of the medical device for delivery and/or implantation, which could help avoid damage or injury to the device and/or tissue.

With reference to the Appellant's specification and figures, Figure 1 shows an enlarged segment 100 representing a portion of a medical device structure, e.g., a stent strut 110, having an adhesive layer 120 deposited thereon. Micro coated pellets 130, 140, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110. According to the specification, "[e]ach of the micro coated pellets 130, 140, 150 and 160 is represented as having a **different** composition and/or dissolution (decomposition) rate," although the micro coated pellets 130, 140, 150 and 160 have substantially the same in size. (Specification, para. 18 (emphasis added)). Figure 1 is reproduced below:

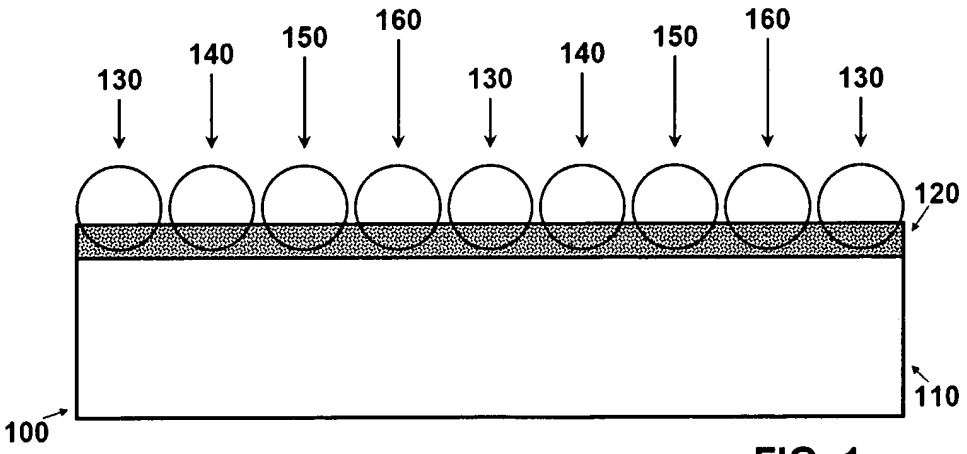

FIG. 1

The micro-pellets can have different dissolution rates by having thicker or thinner coatings (see Specification, para. 27), yet, as the specification states, the different micro-pellets can be kept at substantially the same size, by the addition of an additional substance, e.g. an inert chemical or placebo:

> To keep the micro coated pellets at substantially the same size, the pellets with the fastest release rate can contain some **inert chemical**, such as mannitol. If the pellets having the faster release rate are supplied with a thinner micro coating, the addition of an inert compound would serve to increase the volume of the pellet while keeping the drug content constant.

(Specification, para. 40 (emphasis added)).

Micro-pellets with different release rates but substantially the same size are illustrated in Figures 3A-D. The four different pellets A-D can correspond to the four different pellets 130, 140, 150, and 160 illustrated in Figure 1. Figure 3 is reproduced below:

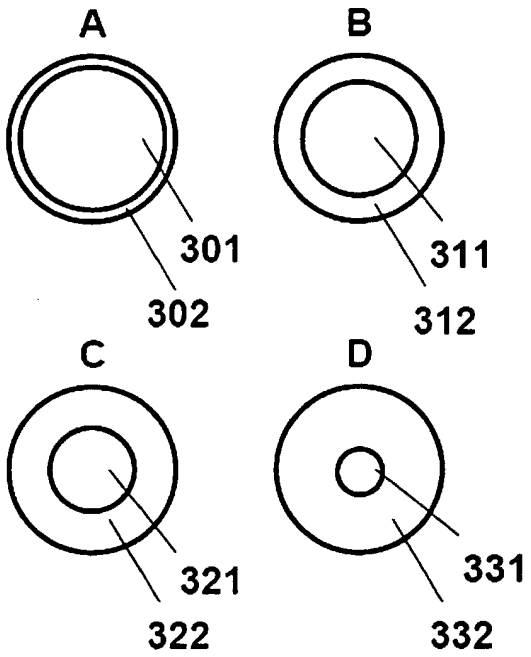

FIG. 3

Each of the micro-pellets A-D in Figures 3A-3D has a **different** coating thickness but has substantially the **same** overall size as the other micro-pellets. Each of the micro-pellets A-D is described as having the same amount of drug (2 μg). Because the micro-pellet sets A-D have different coating thicknesses but the same drug amounts, keeping all of the pellets substantially

the same size means that there will be extra internal volume in the pellets with thinner coatings. To keep the pellets A-D all substantially the same size, the pellets A-D have **different** amounts of placebo. The Specification thus describes the use of placebo to fill this extra volume:

> Since the **internal volume** of the micro coated pellet represented in FIG. 3A is **larger** than the [internal volume of the] micro coated pellet represented in FIG. 3B, the drug mixture of FIG. 3A can contain **more placebo** in order to ensure that the drug content of the micro coated pellet of FIG. 3A would amount to 2 μg.
>
> * * *
>
> Furthermore, since the **internal volume** of the pellet of FIG. 3C is **smaller** than those of Figs. 3A or 3B, the drug mixture of pellet of FIG. 3C may contain **less placebo** than each of the pellets 3A or 3B in order to have the drug content be 2μg, as will the others.

(Specification, paras. 31, 33 (emphasis added)).

The following chart shows the details of the examples of micro-pellets A-D that are described in paragraphs 30-33 of the Specification:

Pellet	Amount of Drug/Placebo Mixture (M)	Percentage Drug in Mixture (%D)	Percentage Placebo in Mixture (%P)	Amount of Drug (M * %D)	Amount of Placebo (M * %P)
A	8 μg	25%	75%	2 μg (= 8*.25)	6 μg (= 8*.75)
B	4 μg	50%	50%	2 μg (= 4*.50)	2 μg (= 4*.50)
C	2.5 μg	80%	20%	2 μg (= 2.5*.80)	0.5 μg (=2.5 * .20)
D	2 μg	100%	0%	2 μg (=2 *1.0)	0 μg (=0*1.0)

As shown in the chart and illustrated in Figures 3A-3D, each of the micro-pellets A-D has the same amount of drug and a different coating thickness, yet substantially the same size due to the different amounts of placebo present.

Explanation of the Independent Claims

Three independent claims are at issue on this appeal, claims 1, 12 and 17. The following charts show the language of each of these independent claims and references to examples of descriptions of embodiments in the original claims, specification and drawings. These references are for illustration of examples only and are not intended to be limiting of the claim language itself. Moreover, with respect to support for the claims under 35 U.S.C. § 112, first paragraph, a complete explanation of the support for certain claim limitations at issue is given below under the heading "Rejection Under 35 U.S.C. § 112."

Claim 1	References to Examples in the Drawings, Original Claims, and Specification
1. A medical device for implantation in a body comprising:	**Specification:** "In one embodiment, the medical device for insertion or implantation in a body includes ... ." (Specification, para. 10)
a structure;	**Drawings:** medical device structure **110** in **Figure 1** **Specification:** "a medical device **structure**, e.g., a stent strut **110**" (Specification, para. 18 (emphasis added))
a set of first coated pellets, each of said first coated pellets containing at least one first therapeutic composition, the set of first coated pellets deposited on the structure at a first site for controlled delivery of the at least one first therapeutic composition to a desired location within the body; and	**Drawings:** first set of coated pellets **130** at a first site in **Figure 1** enlarged view of first coated pellet in **Figure 3A**, with therapeutic core **301** **Specification:** "Micro **coated pellets 130**, 140, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "[M]icro-coating polymer 302 [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the **therapeutic core 301** up to two days after implantation." (Specification, para. 30 (emphasis added))
a set of second coated pellets, each of said second coated pellets containing at least one second therapeutic composition, the set of second coated pellets deposited on the structure at a second site for controlled delivery of the at least one second therapeutic composition to a desired location within the body;	**Drawings:** second set of coated pellets **140** at a second site in **Figure 1** enlarged view of second coated pellet in **Figure 3B**, with therapeutic core **311** **Specification:** "Micro **coated pellets** 130, **140**, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "Comparatively, micro-coating 312 [of pellet B in FIG. 3B] can have a thickness of 3.0 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the **therapeutic core 311** up to thirty days after implantation." (Specification, para. 30 (emphasis added))

Claim 1	References to Examples in the Drawings, Original Claims, and Specification
wherein each of said first coated pellets is covered with a first coating and each of said second coated pellets is covered with a second coating;	**Drawings:** first set of coated pellets **130** in **Figure 1**; enlarged view of first coated pellet in **Figure 3A**, with first coating **302** second set of coated pellets **140** in **Figure 1**; enlarged view of second coated pellet in **Figure 3B**, with second coating **312** **Specification:** "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 up to two days after implantation. Comparatively, **micro-coating 312** [of pellet B in FIG. 3B] can have a thickness of 3.0 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 up to thirty days after implantation." (Specification, para. 30 (emphasis added))
wherein the first coating is thinner than the second coating and has a faster in vivo decomposition rate relative to the second coating to release the first therapeutic composition from the first site faster than the second therapeutic composition from the second site; and	**Drawings:** coating **302** in **Figure 3A** is thinner than coating **312** in **Figure 3B** **Specification:** "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of **thickness 0.2 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 **up to two days after implantation**. Comparatively, **micro-coating 312** [of pellet B in FIG. 3B] can have a **thickness of 3.0 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 **up to thirty days after implantation**. In this example, micro coated pellet A would start releasing its content before pellet B starts. ... **[P]ellet B continues releasing its drug mixture long after pellet A has been completely dissolved.**" (Specification, para. 30 (emphasis added)) **Original Claims 13 & 15:** 13. The medical device of claim 12, wherein the plurality of coated pellets comprise at least a **first set of pellets** and a **second set of pellets**, wherein the first set of pellets has a **faster decomposition rate** that the second set of pellets. 15. The medical device of claim 13, wherein the protective layer on the second set of pellets is **thicker** than the protective layer on the second [sic, first] set of pellets.

Claim 1	References to Examples in the Drawings, Original Claims, and Specification
wherein each of said first coated pellets contains a substance in addition to the first therapeutic composition such that each of the first coated pellets is substantially the same size as each of said second coated pellets.	**Drawings:** pellets **130** are substantially the same size as pellets **140**; pellet **A** in **Figure 3A** is substantially the same size as pellet **B** in **Figure 3B** **Specification:** "To keep the micro coated pellets at substantially the same size, the pellets with the fastest release rate can contain some **inert chemical**, such as mannitol. If the pellets having the faster release rate are supplied with a thinner micro coating, the addition of an inert compound would serve to increase the volume of the pellet while keeping the drug content constant." (Specification, para. 40 (emphasis added)). "Since the **internal volume** of the micro coated pellet represented in FIG. 3A is **larger** than the [internal volume of the] micro coated pellet represented in FIG. 3B, the drug mixture of FIG. 3A can contain **more placebo** in order to ensure that the drug content of the micro coated pellet of FIG. 3A would amount to 2 μg." (Specification, para. 31 (emphasis added)).

Claim 12	References to Examples in the Drawings, Original Claims, and Specification
12. A medical device for implantation in a body comprising:	**Specification:** "In one embodiment, the medical device for insertion or implantation in a body includes ... ." (Specification, para. 10)
a bio-compatible structure;	**Drawings:** medical device structure **110** in **Figure 1** **Specification:** "a bio-compatible structure" (Specification, para. 13) "a medical device **structure**, e.g., a stent strut **110**" (Specification, para. 18 (emphasis added))

Claim 12	References to Examples in the Drawings, Original Claims, and Specification
a plurality of first coated pellets, wherein each of said first coated pellets comprises a first active substance encapsulated by a first coating; and	**Drawings:** first set of coated pellets **130** at a first site in **Figure 1** enlarged view of first coated pellet in **Figure 3A**, with therapeutic core **301** and first coating **302** **Specification:** "Micro **coated pellets 130**, 140, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the **therapeutic core 301** up to two days after implantation." (Specification, para. 30 (emphasis added))
a plurality of second coated pellets, wherein each of said second coated pellets comprises a second active substance encapsulated by a second coating thicker than the first coating;	**Drawings:** second set of coated pellets **140** at a second site in **Figure 1** enlarged view of second coated pellet in **Figure 3B**, with therapeutic core **311** and second coating **312** coating **312** in **Figure 3B** is thicker than coating **302** in **Figure 3A** **Specification:** "Micro **coated pellets** 130, **140**, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of **thickness 0.2 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 up to two days after implantation. Comparatively, **micro-coating 312** [of pellet B in FIG. 3B] can have a **thickness of 3.0 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 up to thirty days after implantation." (Specification, para. 30 (emphasis added)) **Original Claims 13 & 15:** 13. The medical device of claim 12, wherein the plurality of coated pellets comprise at least a **first set of pellets** and a **second set of pellets**, wherein the first set of pellets has a faster decomposition rate that the second set of pellets. 15. The medical device of claim 13, wherein the protective layer on the second set of pellets is **thicker** than the protective layer on the second [sic, first] set of pellets.

Claim 12	References to Examples in the Drawings, Original Claims, and Specification
wherein each of said first coated pellets contains a substance in addition to the first active substance and each of said first coated pellets is substantially the same size as each of said second coated pellets.	**Drawings:** pellets **130** are substantially the same size as pellets **140**; pellet **A** in **Figure 3A** is substantially the same size as pellet **B** in **Figure 3B** **Specification:** "To keep the micro coated pellets at substantially the same size, the pellets with the fastest release rate can contain some **inert chemical**, such as mannitol. If the pellets having the faster release rate are supplied with a thinner micro coating, the addition of an inert compound would serve to increase the volume of the pellet while keeping the drug content constant." (Specification, para. 40 (emphasis added)). "Since the **internal volume** of the micro coated pellet represented in FIG. 3A is **larger** than the [internal volume of the] micro coated pellet represented in FIG. 3B, the drug mixture of FIG. 3A can contain **more placebo** in order to ensure that the drug content of the micro coated pellet of FIG. 3A would amount to 2 μg." (Specification, para. 31 (emphasis added)).

Claim 17	References to Examples in the Drawings, Original Claims, and Specification
17. A method for providing a controlled-release of a therapeutic agent from a medical device comprising:	**Specification:** "In still another embodiment, the invention comprises a process for preparing a medical device with time-release properties including ... ." (Specification, para. 13)
providing a bio-compatible structure;	**Drawings:** medical device structure **110** in **Figure 1** **Specification:** "a bio-compatible structure" (Specification, para. 13) "a medical device **structure**, e.g., a stent strut **110**" (Specification, para. 18 (emphasis added))

Claim 17	References to Examples in the Drawings, Original Claims, and Specification
depositing a set of first pellets comprising a therapeutic composition and a protective layer on the structure at a first location; and	**Drawings:** first set of coated pellets **130** at a first site in **Figure 1** enlarged view of first coated pellet in **Figure 3A**, with therapeutic core **301** and first coating **302** **Specification:** "Micro **coated pellets 130**, 140, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the **therapeutic core 301** up to two days after implantation." (Specification, para. 30 (emphasis added))
depositing a set of second pellets comprising a therapeutic composition and a protective layer on the structure at a second location;	**Drawings:** second set of coated pellets **140** at a second site in **Figure 1** enlarged view of second coated pellet in **Figure 3B**, with therapeutic core **311** and second coating **312** **Specification:** "Micro **coated pellets** 130, **140**, 150 and 160 are embedded in adhesive layer 120 and are bonded to stent strut 110." (Specification, para. 18 (emphasis added)) "Comparatively, **micro-coating 312** [of pellet B in FIG. 3B] can have a thickness of 3.0 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the **therapeutic core 311** up to thirty days after implantation." (Specification, para. 30 (emphasis added))
wherein the therapeutic composition and protective layer at the first location and the second location are selected so that the therapeutic composition from the first location is released faster than the therapeutic composition from the second location;	**Specification:** "[M]icro-coating polymer 302 [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 **up to two days after implantation**. Comparatively, micro-coating 312 [of pellet B in FIG. 3B] can have a thickness of 3.0 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 **up to thirty days after implantation**. In this example, micro coated pellet A would start releasing its content before pellet B starts. ... **[P]ellet B continues releasing its drug mixture long after pellet A has been completely dissolved.**" (Specification, para. 30 (emphasis added))

Claim 17	References to Examples in the Drawings, Original Claims, and Specification
wherein the protective layer at the first location has a different thickness than the protective layer at the second location; and	**Drawings:** coating **302** in **Figure 3A** is thinner than coating **312** in **Figure 3B** **Specification:** "**[M]icro-coating polymer 302** [of pellet A in FIG. 3A] can be of **thickness 0.2 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 up to two days after implantation. Comparatively, **micro-coating 312** [of pellet B in FIG. 3B] can have a **thickness of 3.0 μm** and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 up to thirty days after implantation." (Specification, para. 30 (emphasis added)) **Original Claims 13 & 15:** 13. The medical device of claim 12, wherein the plurality of coated pellets comprise at least a **first set of pellets** and a **second set of pellets**, wherein the first set of pellets has a faster decomposition rate that the second set of pellets. 15. The medical device of claim 13, wherein the protective layer on the second set of pellets is **thicker** than the protective layer on the second [sic, first] set of pellets.
wherein said first pellets contain a substance in addition to the therapeutic composition and each of said first and second pellets is substantially the same size.	**Drawings:** pellets **130** are substantially the same size as pellets **140**; pellet **A** in **Figure 3A** is substantially the same size as pellet **B** in **Figure 3B** **Specification:** "To keep the micro coated pellets at substantially the same size, the pellets with the fastest release rate can contain some **inert chemical**, such as mannitol. If the pellets having the faster release rate are supplied with a thinner micro coating, the addition of an inert compound would serve to increase the volume of the pellet while keeping the drug content constant." (Specification, para. 40 (emphasis added)). "Since the **internal volume** of the micro coated pellet represented in FIG. 3A is **larger** than the [internal volume of the] micro coated pellet represented in FIG. 3B, the drug mixture of FIG. 3A can contain **more placebo** in order to ensure that the drug content of the micro coated pellet of FIG. 3A would amount to 2 μg." (Specification, para. 31 (emphasis added)).

Grounds of Rejection to Be Reviewed on Appeal

Whether claims 1, 4, 5, 9-17, 19-21, and 23-27 (i.e., all pending claims) are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Reversal of this ground of rejection will render moot the objection to the drawings under 37 C.F.R. § 1.83(a).

Whether claims 1, 4, 5, 9-17, 19-21, and 23-27 (i.e., all pending claims) are unpatentable under 35 U.S.C. § 103(a) over U.S. Patent No. 6,849,089 to Stoll (the "Stoll '089 patent"), either alone or in combination with U.S. Patent No. 6,339,130 to Bennett et al.

For purposes of this appeal, all claims stand or fall together as a group.

Argument

Rejection Under 35 U.S.C. § 112

In the Final Office Action dated September 23, 2005, all claims were rejected under 35 U.S.C. § 112. That Office Action stated:

> [T]here is NO mention in the specification about a first set of pellets and a second set of pellets contained *upon a structure*. The specification describes individual pellets with individual coatings upon a structure in single form (being thick or thin) but nowhere does the specification disclose the arrangement of these pellets as a first set and second set upon *a structure* as claimed.

(Office Action dated September 23, 2005, page 2 (emphasis in original)).

The Appellant disagrees with the position taken by the Examiner and respectfully directs the Board to the disclosure contained in the original claims, Abstract, and Specification, which show ample written description support for the claimed subject matter.

With respect to the original claims, original claims 12-15 were as follows:

> 12. **A medical device** for implantation in a body comprising:
> a bio-compatible structure; and

> **a plurality of coated pellets**, wherein each of said coated pellets comprises an active substance encapsulated by a protective layer.
>
> 13. The medical device of claim 12, wherein the plurality of coated pellets comprise at least a **first set of pellets** and a **second set of pellets**, wherein the first set of pellets has a faster decomposition rate that the second set of pellets.
>
> 14. The medical device of claim 12, further comprising a bio-compatible adhesive interposed between the plurality of coated pellets and the structure.
>
> 15. The medical device of claim 13, wherein the protective layer on the second set of pellets is **thicker** than the protective layer on the second [sic, first] set of pellets.

(Original Claims 12-15 (emphasis added)). The original claims form part of the original disclosure and can provide the basis for written description support for later claims. See Hyatt v. Boone, 146 F.3d 1348, 1352 (Fed. Cir. 1998) ("The claims as filed are part of the specification and may provide or contribute to compliance with § 112."). The Examiner's position that "there is NO mention in the specification about a first set of pellets and a second set of pellets contained *upon a structure*" is contradicted by the original claims which recite a structure with a "first set of pellets" and a "second set of pellets." (Original Claim 13).

The Abstract, also a part of the original Specification, states that the invention relates to coating a **single** structure – such as a "medical device structure" (like "a stent") – with a plurality of pellets having **different** release rates:

> The invention relates to a method and device for coating **a device** with time- release drugs by providing a plurality of micro coated pellets having **different release rates** on **the surface of the medical device structure, e.g., a stent**. Organizing the micro pellets with **different release rates** on **the structure** can result in the structure having a plurality of release regions with varying release profiles.

(Abstract (emphasis added)).

The Detailed Description and associated Figures describe and illustrate an embodiment in FIG. 1 in which a **single** structure is shown with four **different** sets of coated pellets 130, 140, 150 and 160:

> FIG. 1 is a schematic representation of one embodiment of the invention. Referring to FIG. 1, an enlarged segment 100 represents a portion of **a medical device structure**, e.g., a stent strut 110, having deposited thereon an adhesive layer 120. **Micro coated pellets 130, 140, 150 and 160** are embedded in adhesive layer 120 and are bonded to stent strut 110. Although not shown, each of the micro coated pellets 130, 140, 150 and 160 is represented as having a **different** composition and/or dissolution (decomposition) rate.

(Specification, para. 18 (emphasis added)).

The Specification also expressly states that the sets of micro coated pellets 130, 140, 150 and 160 can be arranged, for example, in columns or rows on the device:

> The micro coated pellets can be arranged according to their expected release profile or decomposition rate. For example, assuming that micro pellets 130, 140, 150 and 160 have different release profiles, they can be arranged on the structure 110 such that micro coated pellets having a substantially similar release profile are not immediately adjacent to each other. In this embodiment, the surface of the structure can be coated to have micro pellets 130 placed along the longitudinal axis of the stent and in a **columnar** arrangement. With this arrangement, repeating columns of micro coated pellets 130 are adjacent to, for example, columns of micro coated pellets 140 and 160. A similar arrangement can be implemented **circumferentially** around the periphery of the stent. In this embodiment, repeating **rows** of micro coated pellets 130 appear as rings around the circumference of the stent.

(Specification, para. 23 (emphasis added)). Thus, in Figure 1, each pellet can represent a row or column of pellets extending in a plane perpendicular to the plane of the drawing. Alternatively, the regions where each set of pellets is deposited "can be discontiguous and/or disconnected." (Specification, para. 12).

The Detailed Description and associated Figures go on to describe details of examples of pellets that may be used on a structure as shown in Figure 1. The Detailed Description explains

that the pellets can be given different release rates by changing the "**thickness** of the micro coating layer":

> FIG. 2 is a schematic representation of an exemplary micro coated pellet. ... **[T]he thickness of the micro coating layer 220 can affect the drug release profile. A thicker polymer coating layer would lead to a slower dissolution than a thinner polymer layer of the same composition.**

(Specification, para. 27 (emphasis added)).

Similar to the Abstract and Summary of Invention, the Detailed Description states that "multiple micro coated pellets with different dissolution rates can be placed along a segment of a structure":

> **Thus, multiple micro coated pellets with different dissolution rates can be placed along a segment of a structure** to provide a device with pre-defined time-release characteristics.

(Specification, para. 28 (emphasis added)).

The Summary of the Invention states that the pellets with the "different release rates" (as stated in the Abstract) can be "**similar**" in "**size**":

> In another embodiment, each site [on the structure] can have the form of a micro coated pellet (or coated pellets) with each coated pellet including at least one active substance. . . . The coated pellets can be **similar** or dissimilar in composition, **size**, release rate or decomposition rate.

(Specification, para. 11 (emphasis added)).

The Specification makes clear that this similarity of size of the pellets on the structure may be maintained even when the coating thicknesses are different. As described above, Figures 3A-3D illustrate this. Figures 3A-D show four different pellets A-D that can be used on a structure similar to the four different pellets illustrated in Figure 1. As described above, each of the pellets A-D in Figures 3A-3D is illustrated as having substantially the same size as each other, yet each pellet A-D has a **different** coating thickness but the same amount of drug. To

keep the pellets A-D all substantially the same size, the pellets A-D have **different** amounts of placebo, as described above and in paragraphs 30-33 of the Specification.

The Specification makes clear that the pellets A-D are used together on the same structure, as shown in Figure 1, describing them as operating together after a single implantation:

> [M]icro-coating polymer 302 [of pellet A in FIG. 3A] can be of thickness 0.2 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 301 up to two days after **implantation**. Comparatively, micro-coating 312 [of pellet B in FIG. 3B] can have a thickness of 3.0 μm and dissolve at a rate of 0.1 μm per day, thus allowing exposure to the therapeutic core 311 up to thirty days after **implantation**. **In this example, micro coated pellet A would start releasing its content before pellet B starts. There may be a small overlap where both micro coated pellets A and B are releasing simultaneously. Finally, pellet B continues releasing its drug mixture long after pellet A has been completely dissolved.**
>
> * * *
>
> **[T]he pellet in FIG. 3C starts releasing its contents as pellets of FIGS. 3A and 3B near expiration.**

(Specification, paras. 30, 32 (emphasis added)).

The Appellant respectfully submits that a person of ordinary skill in the art, reading the original claims and these passages from the Abstract, Summary of Invention, and Detailed Description would recognize that the original disclosure does disclose different sets of pellets with different coatings (thick and thin) on a single structure. Thus, for the foregoing reasons, the Appellant respectfully submits that the rejection under 35 U.S.C. § 112, first paragraph, should be reversed.

Objection to the Drawings

In the Final Office Action dated September 23, 2005, the drawings were objected to under 37 C.F.R. 1.83(a). That Office Action stated that "the second set of pellets deposited on the structure at a second site" must be shown. (Office Action dated September 23, 2005, page

3). The objection to the drawings appears based on the rejection under 35 U.S.C. § 112, first paragraph. Accordingly, reversal of that rejection renders moot the objection to the drawings.

In any event, in the Reply to the Final Office Action, the Appellant stated the following:

> The Applicant respectfully submits that FIG. 1 shows a structure with four sets of pellets, labeled 130, 140, 150 and 160. The Specification specifically states that these pellets have "a **different** composition and/or dissolution (decomposition) rate." Specification, para. 18 (emphasis added). As described above, the Specification expressly states that the regions where each set of pellets is deposited can be a column or row (extending in a plane perpendicular to the drawing sheet), or the sets can be discontiguous and/or disconnected. The detailed views of FIGS. 3A-3D show examples of four pellets A-D that can correspond to the four pellets 130, 140, 150 and 160. Pellets A-D are pellets with different thicknesses. Accordingly, the Applicant respectfully submits that the current drawings do illustrate the claimed subject matter, and reconsideration of the objection to the drawings is respectfully requested.

(Reply Under 37 C.F.R. § 1.116, December 28, 2005, page 12). The Examiner did not address this argument in the Advisory Action dated January 11, 2006, but did address the arguments regarding the rejection under 35 U.S.C. § 112, first paragraph. Accordingly, this further supports the Appellant's understanding that the objection to the drawings would be rendered moot by reversal of the written description rejection.

Rejections Under 35 U.S.C. § 103(a)

In the Final Office Action dated September 23, 2005, the claims were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,849,089 to Stoll (the "Stoll '089 patent"), either alone or in combination with U.S. Patent No. 6,339,130 to Bennett et al. The Appellant respectfully requests reversal of this rejection, for the following reasons.

Independent claims 1, 12 and 17 recite that each of the first pellets "contain[s] a substance **in addition to** the [first] therapeutic composition [or active substance]" such that the pellets with different coating thicknesses have "**substantially the same size**." (Claims 1, 12 and

17 (emphasis added)). In the Stoll '089 embodiment of Figure 7, the microcapsules have different coating thicknesses but **different** sizes. The Office Action of September 23, 2005, recognizes that the Stoll '089 patent does not specify the claimed feature of pellets with different coating thicknesses but "substantially the same size." Nevertheless, the Office Action asserts that this an obvious "design modification." The Examiner provides no support or citation for this assertion.

"In a proper obviousness determination, '[w]hether the changes from the prior art are 'minor' . . . the changes must be evaluated in terms of the whole invention, including whether the prior art provides any teaching or suggestion to one of ordinary skill in the art to make the changes that would produce the patentee's . . . device.'" In re Chu, 66 F.3d 292, 298 (Fed. Cir. 1995) (emphasis added), quoting Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 935 (Fed. Cir. 1990). In In re Chu, the Federal Circuit reversed a rejection that was grounded on a modification being a mere "design choice" because "there [was] no teaching or suggestion in the prior art that would lead one of ordinary skill in the art to modify the [prior art] structure" to achieve the claimed invention. In re Chu, 66 F.3d at 299. Similarly, in In re Gal, 980 F.2d 717 (Fed. Cir. 1992), the Federal Circuit reversed a rejection that was grounded on a modification being a mere "obvious design choice" because there was no evidence that the prior art "provides a teaching, suggestion, or motivation" to make the modifications necessary to arrive at the claimed structure. In re Gal, 980 F.2d at 720.

Here, the Appellant's claimed invention is not simply an obvious "design modification" but an invention that involved the conception that providing pellets with different dissolution rates but substantially the same size would be advantageous **and** the conception of a specific way in which to achieve the differently eluting but similarly-sized pellets, i.e., by providing an additional substance as claimed. As stated above, the Appellant's Specification describes

examples of ways of manufacturing a device with micro-coated pellets that are advantageously achieved by having differently eluting pellets that are substantially the same size. For example, the Specification discloses coating a stent with an adhesive and then rolling the stent on the micro-pellets. If the differently eluting micro-coated pellets have different sizes as disclosed in the Stoll '089 patent, a rolling process would risk having the smaller particles not be contacted by the adhesive and thus not adhered to the stent. Thus, Appellant's invention of having the micro-pellets be substantially the same size facilitates transfer of the micro-pellets to the stent. The Appellant's invention can additionally or alternatively provide other advantages, such as presenting a more uniform profile of the medical device for delivery and/or implantation, which could help avoid damage or injury to the device and/or tissue.[1]

The Appellant's Specification also provides details on how to achieve the differently eluting but similarly-sized pellets. The Specification gives examples of different drug/placebo mixtures that can be used to achieve similarly-sized pellets with different coating thicknesses. None of the cited references discloses or suggests having pellets with different thicknesses but with additional substances as claimed to achieve "substantially the same size." There is simply no suggestion in the art for arriving at this invention.

The Federal Circuit has cautioned that close adherence to the requirement of a suggestion in the prior art for a proposed modification is particularly important where the invention is simple to make after it has been suggested by the inventor. In In re Dembiczak, the Federal Circuit reversed an obviousness rejection of claims to a leaf bag with a jack-o-lantern face on it. The Federal Circuit stated:

> Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis

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[1] Although the Examiner has not raised the issue, it makes no difference whether or not the advantages of Appellant's invention are specifically described in the Appellant's Specification. In re Chu, 66 F.3d at 298-99.

> is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.

In re Dembiczak, 175 F.3d 994, 999 (Fed. Cir. 1999).

In this case there is simply no teaching or motivation in the art showing either the desirability of differently eluting pellets having substantially the same size or the Appellant's claimed manner of achieving differently eluting pellets having substantially the same size, i.e., with additional substance in the pellets with thinner coatings. Accordingly, the Examiner's rejection that contends the claimed invention was an obvious "design modification" should be reversed. In re Chu, 66 F.3d at 299 (reversing rejection based on modification being an allegedly obvious "design choice" without a suggestion in the art); In re Gal, 980 F.2d at 720 (same).

Conclusion

For the foregoing reasons, the Appellant respectfully requests reversal of the rejections of all pending claims.

The Office is hereby authorized to charge any additional fees under 37 C.F.R. §1.16 or §1.17 or credit any overpayment to Deposit Account No. 11-0600.

Respectfully submitted,

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Appendix I – Claims Involved in the Appeal

1. A medical device for implantation in a body comprising:

a structure;

a set of first coated pellets, each of said first coated pellets containing at least one first therapeutic composition, the set of first coated pellets deposited on the structure at a first site for controlled delivery of the at least one first therapeutic composition to a desired location within the body; and

a set of second coated pellets, each of said second coated pellets containing at least one second therapeutic composition, the set of second coated pellets deposited on the structure at a second site for controlled delivery of the at least one second therapeutic composition to a desired location within the body;

wherein each of said first coated pellets is covered with a first coating and each of said second coated pellets is covered with a second coating;

wherein the first coating is thinner than the second coating and has a faster in vivo decomposition rate relative to the second coating to release the first therapeutic composition from the first site faster than the second therapeutic composition from the second site; and

wherein each of said first coated pellets contains a substance in addition to the first therapeutic composition such that each of the first coated pellets is substantially the same size as each of said second coated pellets.

4. The medical device of claim 1, further comprising an adhesive interposed between the first coated pellets and the structure.

5. The medical device of claim 4, wherein the adhesive layer is one of a polymer, a wax layer, a biodegradable layer or a combination thereof.

9. The medical device of claim 1, wherein one of the first coating or the second coating is one of a polymer, a biodegradable material or a combination thereof.

10. The medical device of claim 1, wherein the medical device is a stent.

11. The medical device of claim 1, wherein one of the first coating or the second coating further comprises a plurality of sublayers.

12. A medical device for implantation in a body comprising:

a bio-compatible structure;

a plurality of first coated pellets, wherein each of said first coated pellets comprises a first active substance encapsulated by a first coating; and

a plurality of second coated pellets, wherein each of said second coated pellets comprises a second active substance encapsulated by a second coating thicker than the first coating;

wherein each of said first coated pellets contains a substance in addition to the first active substance and each of said first coated pellets is substantially the same size as each of said second coated pellets.

13. The medical device of claim 12, wherein the first coated pellets have a faster decomposition rate that the second coated pellets.

14. The medical device of claim 12, further comprising a bio-compatible adhesive interposed between the plurality of first and second coated pellets and the structure.

15. The medical device of claim 13, wherein the second coating on the second coated pellets is thicker than the first coating on the first coated pellets.

16. The medical device of claim 13, wherein the first coating on the first coated pellets has a different composition than the second coating on the second coated pellets.

17. A method for providing a controlled-release of a therapeutic agent from a medical device comprising:

providing a bio-compatible structure;

depositing a set of first pellets comprising a therapeutic composition and a protective layer on the structure at a first location; and

depositing a set of second pellets comprising a therapeutic composition and a protective layer on the structure at a second location;

wherein the therapeutic composition and protective layer at the first location and the second location are selected so that the therapeutic composition from the first location is released faster than the therapeutic composition from the second location;

wherein the protective layer at the first location has a different thickness than the protective layer at the second location; and

wherein said first pellets contain a substance in addition to the therapeutic composition and each of said first and second pellets is substantially the same size.

19. The method of claim 17, further comprising the step of depositing an adhesive layer on the structure prior to the steps of depositing the coated pellets.

20. The method of claim 19, further comprising the step of curing the adhesive.

21. The method of claim 19, further comprising reacting the adhesive layer with therapeutic composition in situ to form a mixture.

23. The method of claim 17, wherein the protective layer at the first location has a different composition than the protective layer at the second location.

24. The medical device of claim 1, wherein the first therapeutic composition is the same as the second therapeutic composition.

25. The medical device of claim 1, wherein the first therapeutic composition is different from the second therapeutic composition.

26. The medical device of claim 12, wherein the first active substance is the same as the second active substance.

27. The medical device of claim 12, wherein the first active substance is different from the second active substance.

Appendix II – Evidence Appendix

In this appeal, Appellant does not rely upon any evidence submitted under 37 C.F.R. §§ 1.130, 1.131 or 1.1321, or any other evidence entered by the Examiner. The Appellant relies upon the Appellant's disclosure and claims and their differences from the prior art relied upon by the Examiner, U.S. Patent No. 6,849,089 and U.S. Patent No. 6,339,130.

Appendix III – Related Proceedings Appendix

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